

Remarks

Claims 13, 20, 21, 23-25, 27-30, 43, 45 and 48-62 were pending in the subject application. By this Amendment, claims 13, 20, 23, 25, 28-30, 52-59, and 62 have been amended, and new claims 63-69 have been added. The undersigned avers that no new matter is introduced by this amendment. Support for the new claims and amendments can be found throughout the subject specification and in the claims as originally filed. Entry and consideration of the amendments presented herein is respectfully requested. Accordingly, claims 13, 20, 21, 23-25, 27-30, 43, 45 and 48-69 are currently before the Examiner for consideration. Favorable consideration of the pending claims is respectfully requested.

The specification is objected to because the 29-amino acid sequence of SEQ ID NO:5 (pNHP₇₃₋₁₀₂) only accounts for residues 73-101 of pNHP₇₃₋₁₀₂, *i.e.*, the residue at the 102 position of pNHP₇₃₋₁₀₂ is missing from the end of the sequence of SEQ ID NO:5. Accordingly, by this Amendment, page 7 of the specification has been amended to add a serine (Ser) residue to the carboxy-terminal end of SEQ ID NO: 5, which is the residue at position 102 of pNHP₇₃₋₁₀₂. Likewise, page 7 of the specification has been amended to add the codon for Ser (-tcc-) to SEQ ID NO: 18, which is the nucleotide sequence encoding the amino acid sequence of SEQ ID NO: 5. Pages 1-9 of the Sequence Listing have also been replaced with a new Sequence Listing with these corrections to SEQ ID NO: 5 and SEQ ID NO: 18. Support for these amendments can be found throughout the specification including, for example, nucleotides 459-461 of SEQ ID NO: 17 at page 10 of the specification as originally filed.

Claims 52-58 and 62 are objected to because they contain subject matter drawn to non-elected inventions (SEQ ID NOs: 12, 13). By this Amendment, SEQ ID NO: 12 and SEQ ID NO: 13 have been removed from the claims, thereby obviating the objection.

Claims 13, 20, 23, 25, and 28-30 are rejected under 35 USC §102(b) as anticipated by Seidman *et al.* (1984). The Examiner asserts that the Seidman *et al.* publication teaches an expression vector comprising a nucleic acid sequence encoding a natriuretic peptide hormone, which comprises "part of the instant SEQ ID NO: 5", and host cells comprising the vector. The applicant respectfully traverses this rejection.

By this Amendment, the applicant has amended independent claims 13 and 28-30 to recite that the nucleic acid sequence encodes a natriuretic hormone peptide comprising an amino acid sequence comprising SEQ ID NO: 5, or a homolog of SEQ ID NO: 5 having at least one conservative amino acid substitution. In addition, the applicant has amended independent claims 20 and 23 to recite that the nucleic acid sequence encodes a natriuretic hormone peptide comprising an amino acid sequence comprising SEQ ID NO: 5, or a homolog of SEQ ID NO: 5 having at least one conservative amino acid substitution, or comprising an amino acid sequence of SEQ ID NO: 6. Support for these amendments can be found, for example, at page 14, lines 17-28, and Table 1 of the specification.

The Seidman *et al.* publication does not teach or suggest a natriuretic hormone peptide comprising the amino acid of SEQ ID NO: 5 or a homolog thereof having at least one conservative amino acid substitution. Thus, for at least this reason, the Seidman *et al.* reference does not teach the applicant's claimed invention. As the Examiner is aware, in order to anticipate, a single reference must disclose within the four corners of the document each and every element and limitation contained in the rejected claim. *Scripps Clinic & Research Foundation v. Genentech Inc.*, 18 USPQ2d 1001, 1010 (Fed. Cir. 1991). The Seidman *et al.* reference fails to teach or suggest every element of the applicant's claimed invention. Accordingly, reconsideration and withdrawal of the rejection under 35 USC §102(b) is respectfully requested.

Claims 13, 20, 21, 23-25, 28-30, 43, 45, 59, and 60 are also rejected under 35 USC §102(b) as anticipated by Shimkets (U.S. Patent No. 6,013,630). The Examiner asserts that the Shimkets patent teaches a pharmaceutical composition comprising "residue 3 through 29 of the instant SEQ ID NO: 5, a homolog of instant SEQ ID NO: 5." The applicant respectfully traverses this rejection.

As indicated above, the applicant has amended independent claims 13 and 28-30 to recite that the nucleic acid sequence encodes a natriuretic hormone peptide comprising an amino acid sequence comprising SEQ ID NO: 5, or a homolog of SEQ ID NO: 5 having at least one conservative amino acid substitution. Additionally, the applicant has amended independent claims 20 and 23 to recite that the nucleic acid sequence encodes a natriuretic hormone peptide comprising an amino acid sequence comprising SEQ ID NO: 5, or a homolog of SEQ ID NO: 5 having at least one conservative amino acid substitution, or comprising an amino acid sequence of SEQ ID NO: 6.

Independent claim 59 has been amended to recite that the nucleic acid sequence encodes a natriuretic hormone peptide comprising an amino acid sequence comprising SEQ ID NO: 6.

SEQ ID NO: 1 of the Shimkets patent is not a homolog of SEQ ID NO: 5 having at least one conservative amino acid substitution. As is evident from the sequences presented below, the second amino acid and the last amino acid of SEQ ID NO: 5 of the subject application are serines, which are not present in SEQ ID NO: 1 of the Shimkets patent.

SEQ ID NO:5 of the subject application:

Gly-Ser-Pro-Trp-Asp-Pro-Ser-Asp-Arg-Ser-Ala-Leu-Leu-Lys-Ser-Lys-Leu-Arg-Ala-Leu-Leu-Ala-Gly-Pro-Arg-Ser-Leu-Arg-Arg-Ser

SEQ ID NO:1 of the Shimkets patent:

Gly-Pro-Trp-Asp-Pro-Ser-Asp-Arg-Ser-Ala-Leu-Leu-Lys-Ser-Lys-Leu-Arg-Ala-Leu-Leu-Ala-Gly-Pro-Arg-Ser-Leu-Arg-Arg

The Examiner also asserts that the Shimkets patent teaches “a nucleic acid encoding a ANF comprising instant SEQ ID NO: 6 (SEQ ID NO:2 of Shimkets).” The applicant submits that SEQ ID NO: 6 of the subject application is not found within SEQ ID NO: 2 of the Shimkets patent. As is evident from the sequences presented below, residue 67 of SEQ ID NO: 2 of the Shimkets patent has an aspartic acid where SEQ ID NO: 6 of the subject application has a glutamic acid.

SEQ ID NO:6 of the subject application:

Val-Ser-Asn-Thr-Asp-Leu-Met-Asp-Phe-Lys-Asn-Leu-Leu-Asp-His-Leu-Glu-Glu-Lys-Met-Pro-Val-Glu-Asp-Glu-Val-Met-Pro-Pro-Gln-Ala-Leu-Ser-Glu-Gln-Thr-Glu

Amino acids 31-67 of SEQ ID NO:2 of the Shimkets patent:

Val-Ser-Asn-Thr-Asp-Leu-Met-Asp-Phe-Lys-Asn-Leu-Leu-Asp-His-Leu-Glu-Glu-Lys-Met-Pro-Val-Glu-Asp-Glu-Val-Met-Pro-Pro-Gln-Ala-Leu-Ser-Glu-Gln-Thr-Asp

The Shimkets patent fails to teach or suggest every element of the applicant's claimed invention. Accordingly, reconsideration and withdrawal of the rejection under 35 USC §102(b) is respectfully requested.

Claims 20, 21, 23-25, and 59 are rejected under 35 USC §102(b) as anticipated by Zivin *et al.* (1984). The Examiner asserts that the Zivin *et al.* publication teaches a nucleic acid sequence encoding a natriuretic hormone peptide “comprising amino acid residues of instant SEQ ID NO: 6

(see figure 1), plasmid vectors comprising the nucleic acids (pBR322), and host cells comprising the vector.” The applicant respectfully traverses this rejection.

The applicant has amended independent claims 20 and 23 to recite that the nucleic acid sequence encodes a natriuretic hormone peptide comprising an amino acid sequence comprising SEQ ID NO: 5, or a homolog of SEQ ID NO: 5 having at least one conservative amino acid substitution, or comprising an amino acid sequence of SEQ ID NO: 6. As is evident from the sequences presented below, residue 67 of Fig. 1 of the Zivin *et al.* publication has an aspartic acid where SEQ ID NO: 6 of the subject application has a glutamic acid.

SEQ ID NO:6 of the subject application:

Val-Ser-Asn-Thr-Asp-Leu-Met-Asp-Phe-Lys-Asn-Leu-Leu-Asp-His-Leu-Glu-Glu-Lys-Met-Pro-Val-Glu-Asp-Glu-Val-Met-Pro-Pro-Gln-Ala-Leu-Ser-Glu-Gln-Thr-**Glu**

Figure 1 of Ziven *et al.*:

Val-Ser-Asn-Thr-Asp-Leu-Met-Asp-Phe-Lys-Asn-Leu-Leu-Asp-His-Leu-Glu-Glu-Lys-Met-Pro-Val-Glu-Asp-Glu-Val-Met-Pro-Pro-Gln-Ala-Leu-Ser-Glu-Gln-Thr-**Asp**

For at least this reason, the Zivin *et al.* publication fails to teach or suggest every element of the applicant’s claimed invention. Accordingly, reconsideration and withdrawal of the rejection under 35 USC §102(b) is respectfully requested.

Claims 20, 21, 23-25, 53-55, 59, and 62 are rejected under 35 USC §102(a) as being anticipated by Collins *et al.* (2002). The Examiner asserts that the Collins *et al.* publication discloses a nucleic acid sequence comprising SEQ ID NO: 19, which encodes the amino acid sequence of SEQ ID NO: 6, as well as vectors and host cells used in cloning and sequence. The applicant respectfully traverses this rejection.

The Office Action contends that the Collins *et al.* publication teaches the aforementioned nucleic acid sequence of SEQ ID NO: 19. This contention is respectfully traversed. Initially, it is noted that the Office has not identified where in the Collins *et al.* publication an alleged anticipatory teaching is to be found. No figure or sequence within the Collins *et al.* publication is cited by the Office Action in support of the contention that the Collins *et al.* publication teaches the nucleic acid sequence of SEQ ID NO: 19. Furthermore, the applicant has carefully reviewed the Collins *et al.* publication and finds no teaching of the nucleic acid sequence of SEQ ID NO: 19, an expression vector comprising the nucleic acid sequence, an isolated cell comprising the nucleic acid sequence,

or a pharmaceutical composition comprising the nucleic acid sequence, as recited in the rejected claims. Thus, for at least this reason, the Collins *et al.* publication does not anticipate claims 20, 21, 23-25, 53-55, 59, and 62.

In the event that the Office maintains this rejection, the applicant respectfully requests that the Office, in the interest of compact prosecution, identify on the record and with specificity sufficient to support a *prima facie* case of anticipation, where in the Collins *et al.* publication the claimed subject matter is alleged to be taught. Furthermore, to the extent that the Office asserts that the claimed subject matter is inherent in the Collins *et al.* publication, if such an assertion is made, the applicant notes that the presence of inherent matter must be grounded on more than speculation, it must be a certainty. *Ethyl Molded Product Co. v. Betts Package Inc.*, 9 USPQ 2d 1001, 1032-1033 (I.D.KY 1988).

Accordingly, reconsideration and withdrawal of the rejection under 35 USC §102(a) is respectfully requested.

Claims 13 and 27 are rejected under 35 USC §103(a) as being obvious over Shimkets (U.S. Patent No. 6,013,630), in view of Nicolaas *et al.* (1996). The applicant respectfully traverses this rejection.

The Examiner asserts that the Shimkets patent teaches “a pharmaceutical composition comprising a nucleic acid sequence encoding a natriuretic hormone peptide (SEQ ID NO: 1), which is a homolog of instant SEQ ID NO: 5.” As indicated above, the applicant has amended independent claim 13 to recite that the nucleic acid sequence encodes a natriuretic hormone peptide comprising an amino acid sequence comprising SEQ ID NO:5, or a homolog of SEQ ID NO:5 having at least one conservative amino acid substitution. SEQ ID NO: 1 of the Shimkets patent is not a homolog of SEQ ID NO: 5 having at least one conservative amino acid substitution. As is evident from the sequences presented below, the second amino acid and the last amino acid of SEQ ID NO: 5 of the subject application are serines, which are not present in SEQ ID NO: 1 of the Shimkets patent.

SEQ ID NO:5 of the subject application:

Gly-Ser-Pro-Trp-Asp-Pro-Ser-Asp-Arg-Ser-Ala-Leu-Leu-Lys-Ser-Lys-Leu-Arg-Ala-Leu-Leu-Ala-Gly-Pro-Arg-Ser-Leu-Arg-Arg-Ser

SEQ ID NO:1 of the Shimkets patent:

Gly-Pro-Trp-Asp-Pro-Ser-Asp-Arg-Ser-Ala-Leu-Leu-Lys-Ser-Lys-Leu-Arg-Ala-Leu-Leu-Ala-Gly-Pro-Arg-Ser-Leu-Arg-Arg

The Nicolaas *et al.* publication is cited for teaching chitosan can be used to enhance small peptide drug delivery. The Nicolaas *et al.* publication does not cure the deficiencies of the Shimkets patent.

The combination of the Shimkets patent and the Nicolaas *et al.* publication fail to teach or suggest every element of the applicant's claimed invention. Accordingly, reconsideration and withdrawal of the rejection under 35 USC §103(a) is respectfully requested.

In view of the foregoing remarks and amendments to the claims, Applicant believes that the currently pending claims are in condition for allowance, and such action is respectfully requested.

The Commissioner is hereby authorized to charge any fees under 37 CFR §§1.16 or 1.17 as required by this paper to Deposit Account 19-0065.

Applicant invites the Examiner to call the undersigned if clarification is needed on any of this response, or if the Examiner believes a telephonic interview would expedite the prosecution of the subject application to completion.

Respectfully submitted,

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Attachments: Submission of Sequence Listing and Statement
Replacement Sequence Listing on paper (pages 1-9)